

**To:** CN=Erin Foresman/OU=R9/O=USEPA/C=US@EPA;anke.mueller-solger@deltacouncil.ca.gov[]; nke.mueller-solger@deltacouncil.ca.gov[]  
**Cc:** CN=Valentina Cabrera-Stagno/OU=R9/O=USEPA/C=US@EPA[]  
**From:** CN=Bruce Herbold/OU=R9/O=USEPA/C=US  
**Sent:** Wed 9/12/2012 7:23:54 PM  
**Subject:** Re: Fw: effects of 1641 on springtime salinities  
EPA comments SB Workshop 2 Phase II Update Bay Delta WQCP BHedits sep12.docx  
<http://www.epa.gov/sfbaydelta>

Erin, here's my go at writing up Anke's graphs

Anke, I don't think I say anything beyond your intent, but check me on it -- I think this is great stuff for the Board and do not want to cause you any unprepared grief..

Bruce Herbold  
USEPA Fish Biologist  
(415) 972 3460

"If 90% of the ideas you generate aren't absolutely worthless, then you're not generating enough ideas". -- Michael Artin

From: Erin Foresman/R9/USEPA/US  
To: Bruce Herbold/R9/USEPA/US@EPA  
Cc: Valentina Cabrera-Stagno/R9/USEPA/US@EPA  
Date: 09/11/2012 03:49 PM  
Subject: Re: Fw: effects of 1641 on springtime salinities

hey bruce,  
it would be helpful for me if i could talk to you -- or maybe you could walk me through this work anke did.  
are you around tomorrow?

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I work a part time schedule (M 7:30a - 4:00p, T - F 7:30a - 2:00p)

-----Bruce Herbold/R9/USEPA/US wrote: -----

To: Karen Schwinn/R9/USEPA/US@EPA, Erin Foresman/R9/USEPA/US@EPA, Valentina Cabrera-Stagno/R9/USEPA/US@EPA, Tim Vendlinski/R9/USEPA/US@EPA, Tom Hagler/R9/USEPA/US@EPA  
From: Bruce Herbold/R9/USEPA/US  
Date: 09/11/2012 11:35AM  
Subject: Fw: effects of 1641 on springtime salinities

Here's a set of graphs from Anke -- It isn't a stand-alone story, but I think it is a great story to tell the board. Look particularly at graphs 7&8. In brief, D-1641 reestablished a salinity pattern in the estuary which had gone from being extremely spiky in the years before Shasta\*Friant but after all the dredging and leveeing through the development of export operations that flattened seasonal differences and then D1641 using X2 regs to re-assert seasonal changes, but with a constriction in fall variability. see if these graphs tell that story to you.

Bruce Herbold  
USEPA Fish Biologist  
(415) 972 3460

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----- Forwarded by Bruce Herbold/R9/USEPA/US on 09/11/2012 11:30 AM -----

From: "Mueller-Solger, Anke@DeltaCouncil" <anke.mueller-solger@deltacouncil.ca.gov>  
To: Bruce Herbold/R9/USEPA/US@EPA  
Date: 09/10/2012 01:24 PM  
Subject: RE: effects of 1641 on springtime salinities

Well, I couldn't resist and went ahead & did it.... results attached.

Depending on what you'd like to use, if anything, I can change the y axis on the graphs (which goes to 140 km only because of the pre-Shasta salt intrusions).

I categorized the years by WYT. This makes it more easily visible that under D1485, we screwed up the spring pattern in dry years and under D1641 we are screwing up the fall pattern in wet years (except 2011, although that had a weird Nov-Dec).

Of course unimpaired flow isn't natural flow, and the outflow-salinity relationship was undoubtedly different historically than the Jassby et al 1995 equation. This is a VERY BIG caveat with respect to the "unimpaired halograph." I wonder if someone could model historical outflow-salinity relationships with knowledge of historical bathymetry/geometry. It would also be VERY nice if someone could improve the "unimpaired" flow estimates by taken historical lanscape chnages into account... That would be a big undertaking, but worth it imo!

Anke

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From: Bruce Herbold [Herbold.Bruce@epamail.epa.gov]  
Sent: Monday, September 10, 2012 11:29 AM  
To: Mueller-Solger, Anke@DeltaCouncil  
Subject: Re: effects of 1641 on springtime salinities

Priorities, priorities -- I'm attacking the reviews today too.

But if you could send me what you got, I'd like a more relaxed look at it, and then I might harass you for a final version if we both agree the board should see it.

thanks

Bruce Herbold  
USEPA Fish Biologist  
(415) 972 3460

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From: "Mueller-Solger, Anke@DeltaCouncil" <anke.mueller-solger@deltacouncil.ca.gov>  
To: Bruce Herbold/R9/USEPA/US@EPA  
Date: 09/08/2012 10:40 PM  
Subject: Re: effects of 1641 on springtime salinities

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Bruce, sure, but I made these graphs before I figured out the Dayflow/X2 issues, so there are some mistakes in there I'd like fix first. How soon do you need this? I'm busy reviewing proposals right now (like, RIGHT now)... Anke

Sent from my somewhat smart phone.  
916 275-8727

Bruce Herbold <Herbold.Bruce@epamail.epa.gov> wrote:

Could you send me that graph you showed at the first Invited Panel meeting of how Springtime salinities returned to a predictable shape after 1641 was adopted, please? May I use it EPA comments to the Board?

thanks

Bruce Herbold  
USEPA Fish Biologist  
(415) 972 3460

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(See attached file: AnnualX2MovementsCorrected(3)red.pdf)

[attachment "AnnualX2MovementsCorrected(3)red.pdf" removed by Erin Foresman/R9/USEPA/US]